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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,378	04/01/2004	Andrej Astachow	071308.0536	8247
31625	7590	03/07/2006	EXAMINER	
BAKER BOTTS L.L.P. PATENT DEPARTMENT 98 SAN JACINTO BLVD., SUITE 1500 AUSTIN, TX 78701-4039			HOGAN, JAMES SEAN	
			ART UNIT	PAPER NUMBER
			3752	

DATE MAILED: 03/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/815,378

Applicant(s)

ASTACHOW ET AL.

Examiner

James S. Hogan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-13, 15-17, 19 and 20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-13, 15-17, 19 and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to claims 5, 16 and 20 have been considered but are moot in view of the new ground(s) of rejection. The Final Rejection, dated November 30, 2005 of claims 1-20 has been withdrawn, and prosecution of the Application is now re-opened.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 2-12, 15, 16, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,467,702 to Lambert et al. in view of U.S. Patent No. 6,055,957 to Hasegawa et al. and further in view of U.S. Patent No. 5,127,584 to Sczomak.

Regarding claims 5, 16 and 20, Lambert et al. ('702) discloses a fuel injection valve having a valve body, itself having a tip (12). The tip contains injection orifices (15, 21) and a valve needle (generally 12). The seat (12b) at the tip of the valve needle has groove shaped recesses (54, 52, Figure 4) in the tip. Lambert et al. ('702) does not teach the recesses being at the absolute cone of the valve needle. Hasegawa et al. ('957) shows, in figure 4-a, a three-piece injection needle, in disassembled form, where the cone (7) has groove shaped recesses in the cone of the valve needle. Further, Lambert et al. ('702) does not teach the valve needle having a guide for reducing rotational movements. Sczomak ('584) teaches a fuel injector with a slot and key guide

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(as per claim 6) in the form of a feather key (68) that engages in a needle guide (46) of the valve needle in a guide groove (64) (as per claim 7) in a hollow cylindrical surface in the valve body to prevent rotation (see Abstract). As per claim 8, the guide groove of Sczomak ('584) runs longitudinally. As per claims 2, 15 and 19 each recess of Lambert et al. ('702) corresponds at least to a diameter of an injection orifice. As per claim 9, each of the recesses of Lambert et al. ('702) features an arched contour. As per claim 10, each recess of Lambert et al. ('702) appears to have a curvilinear and presumably semi-circular cross-section. As per claim 11, the recesses of the injection orifices of Lambert et al. ('702) are adapted to compensate for asymmetrical flow conditions. As per claim 12, shown in Figure 10, Lambert teaches an embodiment that features a set of recesses (14) with a triangular cross-section. Therefore one having ordinary skill in the art at the time the invention was made would have modified the recessed valve needle of Lambert et al. ('702) with the recesses groove valve needle cone of Hasegawa et al. ('957) in order to provide a conical seat in a fuel injection valve. Summarily, It would have been obvious to one skilled in the art at the time the invention was made to have modify the injector of Lambert et al. ('702) with the slot and key guide of Sczomak ('584) in order to minimize rotation of a valve member in the injection device to reduce leaks, and to preserve the alignment of other components.

Claims 3, 4, 13, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,467,702 to Lambert et al. in view of U.S. Patent No. 6,055,957 to Hasegawa et al. and U.S Patent No. 5,127,584 to Sczomak, and even further in view of U.S. Patent No. 6,811,105 to Kato et al.

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Lambert et al. ('702), as modified by Hasegawa et al. ('957) and Sczomak ('584) above do not show the bottom edge of a stepped-contour recess on a valve needle lying at approximately the same height as the bottom of each orifice. Kato et al, in Figure 5, shows an embodiment with a recess having a stepped contour (as per claim 3), whose bottom edge of which lies at the approximate bottom of an orifice (23), as per claims 13 and 17. As per claim 4, each recess of Lambert et al. ('702) appears to have a curvilinear and presumably semi-circular cross-section. It would have been obvious to one skilled in the art at the time the invention was made to have modified the fuel injector of Lambert et al ('702) as modified by Hasegawa et al. ('957) and Sczomak ('584) with the recess-alignment of Kato et al. ('105) in order to alleviate leaks and pooling in the bottom of a valve body in a fuel injection device.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure is as follows:

U.S. Patent No. 4,382,554 to Hofmann, disclosing a fuel injector

U.S Patent No. 6,655,612 to Oliver, disclosing rotation limiting feature for a fuel injector.

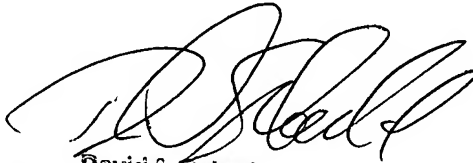
Any inquiry concerning this communication or earlier communications from the examiner should be directed to James S. Hogan whose telephone number is (571) 272-4902. The examiner can normally be reached on Mon-Fri, 7:00a-4:00p EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Scherbel can be reached on (571) 272-4919. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JSH
2/24/2006



David A. Scherbel
Supervisory Patent Examiner
Group 3700